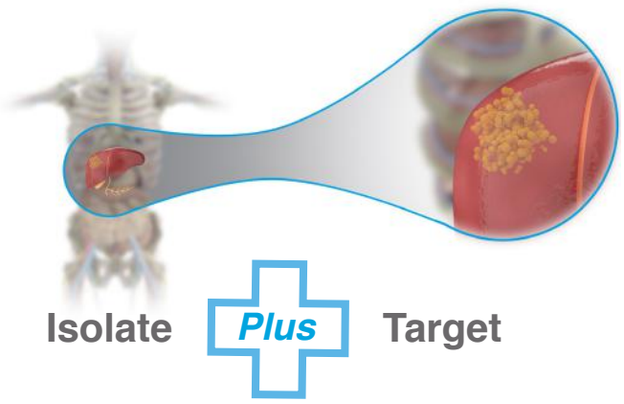
AVAS™
Arterial Access System

all vascular

AVAS® — a new device making the delivery of targeted chemotherapy easier and more effective

A major challenge in treating colorectal liver metastases is to deliver therapeutic doses of chemotherapy to tumour sites, preserve healthy cells and minimize chemotherapy induced side effects.

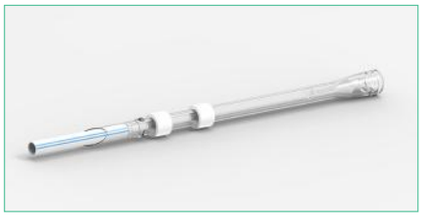
The AVAS® device aims to meet this challenge by enabling isolation of the liver and the direct intra-arterial infusion of chemotherapy such as oxaliplatin to the isolated liver.



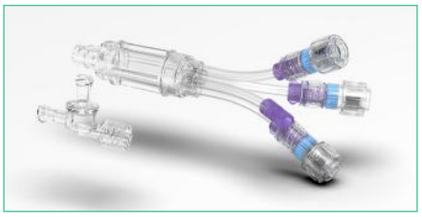
What is AVAS® ?

AVAS® is an implantable arterial access device that facilitates repeated intra-vascular access for up to 29 days. Its Multiport Valve feature facilitates the simultaneous introduction of multiple balloon catheters to isolate, target and infuse chemotherapy, such as oxaliplatin directly to the liver.

The AVAS® components



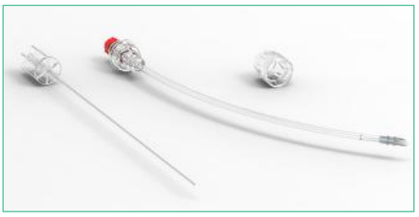
The AVAS® Implant is the primary assembly of the overall AVAS® device. It is anastomosed to the patient's axillary artery, tunnelled under the pectoral muscle with the exit site sitting laterally to the chest wall.



The single-use Multiport Valve Kit consists of the multiport valve and the dual check valve.

The single-use multiport valve is attached to the exit site of the AVAS® implant.

The multiport valve allows the introduction of multiple balloon catheters through the AVAS® implant to isolate, target and infuse oxaliplatin directly to the liver.



The single-use Occluder Kit comprises the occulder and the stylet.

The occluder sits within the implant between scheduled infusions to maintain the patency of the device and reduce the risk of thrombus formation.

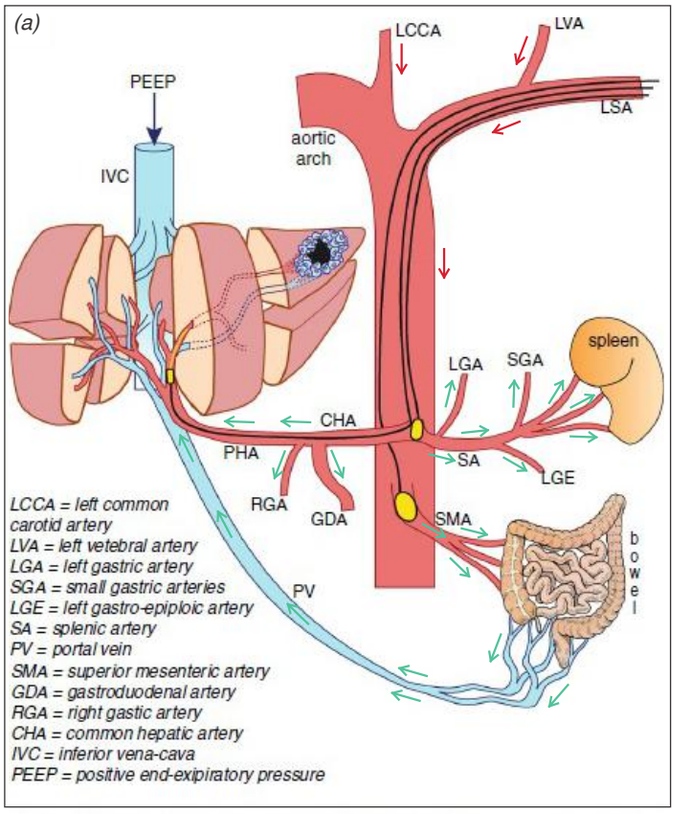
The stylet is a procedural aid and is removed once the occluder is in position.

How does AVAS® work?

The AVAS® device allows for near complete hepatic isolation through the simultaneous introduction of multiple balloon catheters via its multiport valve feature. Using standard endovascular techniques, balloon catheters are placed within the celiac axis, the hepatic artery and the superior mesenteric artery, temporarily obstructing the blood supply to the liver. Hepatic outflow is controlled intraoperatively using positive end expiratory pressure (PEEP).

Once the liver has been placed in isolation, intra-arterial infusion of the chemotherapy, oxaliplatin is directly administered to the isolated liver. The oxaliplatin is held within the liver for up to 20 minutes. Studies have shown t½α for oxaliplatin to be ~0.28hr (~17min).[1]

This technique is known as liver isolation oxaliplatin, LIOX.



Catheter schematic for the liver isolated oxaliplatin, LIOX

Figure (a): Schematic of the super-selective isolated tumour infusion; the infused chemotherapy flows to the tumour by the branches of the hepatic segmental arteries as well as via the branches of the portal vein through the collaterals between the portal vein and the hepatic segmental arteries. The inferior mesenteric artery has been tied off in this cohort of patients and is not shown in the schematic.[2]

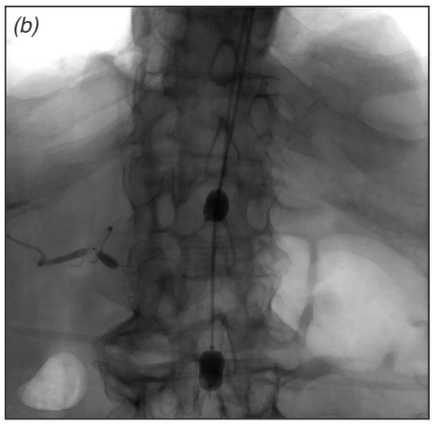


Figure (b): Angiogram showing hepatic isolation achieved through the placement of balloon catheters in the coeliac axis, the superior mesenteric artery and the proper hepatic artery. The micro-balloon catheter in the proper hepatic artery is introduced coaxially through the catheter in the coeliac axis, and is used to administer oxaliplatin directly to the liver.[2]

AVAS® benefits

- Targeted delivery of chemotherapy has been able to demonstrate fewer side effects and improved tolerance to the treatment.[2]
- Improved patient tolerance allows more frequent treatment cycles over a shorter period.[2]

Reference:

1. Graham MA, Lockwood GF, Greenslade D, Brienza S, Bayssas M, Gamelin E. Clinical pharmacokinetics of oxaliplatin: a critical review. Clin Cancer Res. 2000;6(4):1205–18.
2. Rodney J. Lane, Nyan Y. Khin, Chris M. Rogan, John Magnussen, Nick Pavlakis, David M. Lane and Stephen Clarke. Safety and Feasibility of Repeatable Hepatic Vascular Isolation Chemotherapy: A Pilot Study. Ann Surg Oncol DOI 10.1245/s10434-016-5198-z

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